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# CLAIMS

1. A device for the working of fluids, said device comprising a chamber having ahead, a component reciprocally movable within said chamber, said head and component defining a variable working volume therebetween, said component having a port communicating with a passage within said component, both said port and passage permitting flow of working fluid to and from said working volume during only a portion of a reciprocation cycle, said port not communicating with said working volume during a remaining portion of said reciprocating cycle.

2. A device for the working of fluids, said device comprising a cylinder having a closed end, a component reciprocally movable within said cylinder, a variable working volume defined between said closed end of said cylinder and said component, at least one rotating shaft mounted outside said cylinder, said component having a projecting portion which pierces said closed end of said cylinder, said projecting portion being mechanically linked to said shaft, said projecting portion in operation functioning to transfer mechanical work between said component and said shaft.

3. A device for the working of fluids, said device having a cylinder assembly with internal circumferential depressions, a reciprocating component with external circumferential projections, said depressions and projections having working surfaces defining at least one pair of torroidal fluid working chambers in operation of cyclically variable capacity, said component consisting of at least one structural member having a working surface mounted externally on a (hollow) cylinder, said

cylinder having the function of transmitting loads imposed by the working surface.

4. A device for the working of fluids, said device having a cylinder assembly with internal circumferential depressions, a component with external circumferential projections, said projections reciprocating in said depressions and both having working surfaces defining at least one pair of torroidal fluid working chambers in operation of cyclically variable capacity, said assembly consisting of at least one structural member having working surfaces mounted internally on a cylinder having the function of transmitting load imposed by the working surfaces.

5. A device for the working of fluids, said device having at least one component mounted to reciprocate within a cylinder assembly having at least two closed ends pierced by projecting portions of said component, at least one of said projecting portions functioning to transmit loads imposed on said reciprocating component, said component having a circumferential projection incorporating working surfaces, said surfaces with said ends in operation defining two fluid working chambers having torroidal configuration of cyclically variable capacity.

6. A device for the working of fluids, said device having at least one component mounted to reciprocate within a cylinder assembly consisting of at least one pair of cylinder portions each having one closed end, said component having working surfaces that in operation define a fluid working chamber of cyclically variable capacity located in each cylinder portion, at least one reciprocating component having at least one projecting section which pierces said closed end and which functions to

transmit loads imposed on said component, there being deployed between said cylinder assembly and said reciprocating component a mechanism which causes said component to rotate while reciprocating.

7. A device for the working of fluids, said device having at least one component mounted to reciprocate within a cylinder assembly consisting of at least one pair of cylinder portions each having one closed end, said component having working surfaces that in operation define at least one fluid working chamber of cyclically variable capacity, said cylinder assembly being so mounted in an externally disposed housing that said cylinder assembly rotates in said housing while said component reciprocates within said assembly.

8. A device for the working of fluids, said device having a (at least one) cylinder assembly and a (at least one) reciprocating component together in operation defining at least two fluid working chambers with surfaces of torroidal configuration and cyclically variable capacity, said surfaces of each working chamber having variable separation being so formed as to cause said component to rotate and reciprocate relative to said cylinder assembly.

9. A device for the working of fluids, said device having a cylinder assembly with an interior working surface of which has at least one circumferential depression, said device also having a shaft reciprocating within said cylinder assembly, said shaft having at least one circumferential projection occupying part of said depression, the working surfaces of said device partly

comprising the surfaces of said depression and said projection, said shaft transmitting loads imposed by said working surfaces.

10. A device for the working of fluids, said device having at least one cylinder assembly and at least one component reciprocating within said assembly, said component and assembly together defining at least two fluid working chambers having surfaces of torroidal configuration and cyclically variable capacity, said surfaces of each chamber in operation being variably, separated and so configured as to cause said component to rotate while reciprocating relative to said cylinder assembly.

11. The device of claim 2, wherein said transfer of mechanical work is by means of at least one device known as a scotch yoke.

12. The device of claim 2, including a further shaft rotatable contra to said other shaft wherein work is transferred between said component and two contra-rotating shafts.

13. The device of claim 2 wherein said mechanical linkage is by tensile member.

14. The device of claim 2 wherein said mechanical linkage is of cyclically variable length.

15. The device of claim 2 wherein said mechanical linkage cyclically absorbs and gives up energy.

16. The device of claim 2 wherein a cross-section of part of said mechanical linkage resembles the cross-section of a bellows.

17. The device of claim 2 wherein said device is an internal combustion engine.

18. The device of claim 9 wherein said shaft has at least one internal volume for the passage of working fluid.

19. The device of claim 9 wherein said shaft rotates while reciprocating.

20. The device of claim 10 wherein said surfaces have the approximate configuration of an endless circular wave-form plane.

*Handwritten signatures and initials:*  
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